इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”
Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

IS 6290 (1986): Steam irons [ETD 32: Electrical Appliances]

“ज्ञान से एक नये भारत का निर्माण”
Satyanarayan Gangaram Pitroda
“Invent a New India Using Knowledge”

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”
Bhartṛhari—Nītiśatakam
“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

IS : 6290 - 1986
(Reaffirmed 1996)

Indian Standard

SPECIFICATION FOR STEAM IRONS

(First Revision)

First Reprint SEPTEMBER 2000

UDC 648.425-83

© *Copyright* 1987

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 7 *July* 1987

AMENDMENT NO. 5 MAY 2002
TO
IS 6290 : 1986 SPECIFICATION FOR STEAM IRONS

(First Revision)

(*Page* 8, *clause* 15.3, *line* 3) — Substitute '0.1 l' *for* '100 ml'.

(*Page* 13, *clause* **22.104**, *line* 2) — Substitute '3.5 kg' *for* '1.25 kg'.

(*Page* 20, *clause* **104.2**, *line* 2) — Substitute '20°C' *for* '7°C'.

(ETD 32)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 1 MAY 1989
TO
IS : 6290 - 1986 SPECIFICATION FOR STEAM IRONS

(First Revision)

(*Page* 9, *clause* **18**) — Substitute the following for the existing clause:

18. ENDURANCE

This clause of IS : 302 - 1979 is applicable except as follows.

18.1 Replacement — Appliances shall be so constructed that, in normal use there will be no electrical or mechanical failure that might impair compliance with this standard. The insulation shall not be damaged and contacts and connections shall not work loose as a result of heating, vibration, etc.

Morever, overload protection devices shall not operate under normal running conditions.

The iron is operated at 1·15 times the rated input. In case of automatic irons, the thermostat is set at the maximum setting. For iron without thermostat or self resetting thermal cut outs, the temperature so the sole plate shall be maintained between 205°C and 260°C by suitable cooling means such as a jet of air or a cooling plate.

The iron shall be supported in air with the sole plate in a horizontal position so as to allow free passage of steam. The test shall be arranged to give a cycle of 8 hours of steaming and 8 hours of dry heating. The iron is operated under this condition for a total period of 200 hours.

During the steaming test, irons with adjustable thermostats shall be set at the steaming setting marked by the manufacturer or at the mid setting of the steaming range.

For steaming test, the water used shall comply with Appendix A uuless the manufacturer's instructions say that the iron is to be used with distilled or demineralized water in which case, the steam test shall be made with such water. De-furring may be carried out as required in accordance with the manufacturer's instructions.

There shall be no electrical or mechanical failure of the iron or ermostat nor undue burning, pitting or welding of contacts.

18.2 to **18.4** — Not applicable.

18.5 Replacement — After this test, the iron shall withstand the electric strength test of **16.4** of IS : 302-1979.

(ETDC 43)

Printed at New India Printing Press, Khurja, India

AMENDMENT NO. 2 JUNE 1991

TO

IS 6290 : 1986 SPECIFICATION FOR STEAM IRONS

(*First Revision*)

(*Page* 4, *clause* **0.3**) — Insert the following clause as **0.4** after **0.3** and renumber the subsequent clause:

'**0·4** Recommended temperature ranges of ironing for different types of fabrics have been given in Appendix AA.'

[*Page* 9, *clause* **18.1**, *para* 6, *line* 1 (*see also* Amendment No. 1)] — Substitute 'Appendix BB' *for* 'Appendix AA'.

(*Page* 16, *clause* **101**) — Insert the following clause as **101** and renumber the subsequent clauses:

'101 MEASUREMENT OF HEATING-UP TIME

101.1 The iron is placed on the three pointed metallic supports while under measurement. The three pointed supports are constructed so that they support the sole plate of the iron horizontally at least 100 mm above the base surface on which the iron is placed. The thermocouple is attached at the mid-point of the sole plate (*see* Fig. 103).

101.2 Starting from ambient temperature, the iron in heated-up with the voltage corresponding to rated input, the thermostat, if any, set at the highest temperature. Where a rated voltage range is specified, this voltage should correspond to the voltage corresponding to mean rated input.

101.3 The heating-up time which is the time necessary for the temperature to exceed the ambient temperature by 180°C is measured, and is expressed in minutes and seconds.

101.4 The heating-up time shall not exceed 8 minutes.'

(*Page* 26, *Table* 101) — Substitute the table given on page 2 for the existing table:

'TABLE 101 SCHEDULE OF TYPE TEST

(*Clause* 108.1)

SL. NO.	TEST	CLAUSE REFERENCE
1.	Protection against electric shock	8
2.	Input	10
3.	Temperature-rise	11
4.	Operation under overload conditions	12
5.	Electrical insulation, and leakage current at operating temperature	13
6.	Moisture resistance	15
7.	Insulation resistance and electric strength (after humidity treatment)	16
8.	Endurance	18
9.	Abnormal operation	19
10.	Stability	20
11.	Mechanical strength	21
12.	Construction	22
13.	Cord grip and cord guard	25
14.	Earthing connection	27
15.	Screws and connections	28
16.	Creepage distances and clearances	29
17.	Resistance to heat, fire and tracking	30
18.	Resistance to rusting	31
19.	Finish	33
20.	Measurement of heating-up time	101
21.	Measurement of sole plate temperature	102
22.	Measurement of temperature distribution	103
23.	Measurement of overswing temperature and heating-up excess temperature	104
24.	Measurement of cyclic fluctuation of temperature of hottest point	105
25.	Measurement of temperature drop under load	106
26.	Measurement of heating-up time under steaming operation	107
27.	Measurement of steaming time and steaming rate	108'

(*Page* 29, *Appendix* AA) — Renumber the existing Appendix as 'BB' and insert the following Appendix as 'AA':

APPENDIX AA

(*Clause* 0.4)

RECOMMENDED IRONING TEMPERATURE RANGES

Fabric	(*Temperature 0°C*)
Nylon	70 to 90
Rayon	100 to 120
Silk	130 to 150
Wool	160 to 180
Cotton/linen	190 to 210

(ETD 32)

Printed at New India Printing Press, Khurja, India

AMENDMENT NO. 3 AUGUST 1992
TO
IS 6290 : 1986 SPECIFICATION FOR STEAM IRONS

Substitute 'IS 302-1 (1979) Safety of household and similar electrical appliances : Part 1 General requirements (*fifth revision*)' *for* 'IS 302 : 1979 General and safety requirements for household and similar electrical appliances (*fifth revision*)' wherever it appears in the standard.

(ETD 32)

Printed at New India Printing Press, Khurja, India

AMENDMENT NO. 4 SEPTEMBER 1999
TO
IS 6290 - 1986 SPECIFICATION FOR STEAM IRONS

(First Revision)

(*Page* 4, *clause* 1.1, *para* 3) — Insert the following new para at the end of para 3:

'IS : 302-2-205 Safety of household and similar electrical appliances : Part 2 Particular requirement, Section 205 Steam irons', covering exclusively safety requirements of steam irons has been published. With this, the safety requirements specified in this standard (clauses **8** to **32** except clauses **18** and **21.101**) stands referred to the corresponding clauses of IS : 302-2-205. Steam irons shall conform to IS : 302-2-205 regarding safety requirements. Regarding clauses **18** and **21.101** as well as other performance requirements, the provisions of this standard shall continue to apply.'

(ETD 32)

Printed at New India Printing Press Khurja India

Indian Standard

SPECIFICATION FOR STEAM IRONS

(First Revision)

Electrical Appliances Sectional Committee, ETDC 43

Chairman	*Representing*
Shri A. N. Ghosh	Development Commissioner, Small Scale Industries (Ministry of Industry), New Delhi
Members	
Shri A. Bandopadhya (*Alternate* to Shri A. N. Ghosh)	
Shri G. K. Aithal	Bajaj Electricals Ltd, Bombay
Brig M. L. Anand	Consumer Council of India, New Delhi
Assistant Director (Standards) Electrical	Railway Board (Ministry of Railways), New Delhi
Joint Director (Standards) Electrical/8 (*Alternate*)	
Shri Vinod Astavans	Escorts Ltd, Faridabad
Shri V. P. Roy (*Alternate*)	
Chief Engineer (Electrical I)	Central Public Works Department, New Delhi
Surveyor of Works (V) (*Alternate*)	
Shri Anil Keshav Dhumak	Consumer Guidance Society of India (Regd), Bombay
Shri B. K. Doshi	Jashwantlal Kantilal, Bombay
Shri N. P. Doshi (*Alternate*)	
Shri K. L. Garg	Directorate General of Supplies & Disposals (Inspection Wing), New Delhi
Shri R. P. Sehgal (*Alternate*)	
Shri G. R. Ghosh	Controllerate of Inspection (Electronics) (Ministry of Defence) (DGI), New Delhi
Shri S. N. Kundu (*Alternate*)	
Shri Hardit Singh	Ditz Electricals (India) Ltd, Delhi
Shri Jagdip Singh (*Alternate*)	
Shri R. Iyadurai	Standard Electric Appliances, Tuticorin
Shri N. Rajagopalan (*Alternate*)	
Shri V. K. Kapur	Director of Industries, Delhi Administration, New Delhi
Shri O. P. Sachdeva (*Alternate*)	

(*Continued on page 2*)

© *Copyright* 1987
BUREAU OF INDIAN STANDARDS
This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(*Continued from page* 1)

Members	*Representing*
Shri M. M. Ali Khan	Directorate General of Technical Development, New Delhi
Shri Kulmohan Singh	Director of Industries, Government of Haryana, Chandigarh
Shri C. P. Behl (*Alternate*)	
Shri Thiru C. Natarajan	Department of Industries and Commerce, Government of Tamil Nadu, Madras
Superintendent, CETL (*Alternate*)	
Shri G. D. Patil	Elpro International Ltd, Pune
Shri H. L. Dham (*Alternate*)	
Shri Rajinder Nath	C. Lal Electricals & Mechanicals, Ambala
Shri Satish Chander (*Alternate*)	
Shri R. V. S. Rao	The Bombay Electric Supply and Transport Undertaking, Bombay
Shri I. M. Fidai (*Alternate*)	
Shri K. P. Sethi	Racold Appliances Pvt Ltd, Pune
Shri V. K. Manchanda (*Alternate*)	
Shri R. N Somai	Rallis India Ltd, Bombay
Shri V. R. Dakshinamurthy (*Alternate*)	
Shri D. Sudhakar Reddi	Tamil Nadu Electric Appliances Manufacturers' Association, Madras
Dr R. Ramarathanam (*Alternate*)	
Shri J. P. Srivastava	National Test House, Calcutta
Shri M. P. Welvakar (*Alternate*)	
Shri Y. P. Suri	Electrical Appliances Manufacturers' Association, Delhi
Shri Ramesh Khanna (*Alternate*)	
Shri H. K. Thadani	National Physical Laboratory (CSIR), New Delhi
Shri S. K. Thakural	Engineer-in-Chief's Branch, Army Headquarters, New Delhi
Shri P. K. Sukurar (*Alternate*)	
Shri S. P. Sachdev, Director (Elec tech)	Director General, BIS (*Ex-officio Member*)

Secretary

Shri H. S. Swami
Joint Director (Elec tech), BIS

Indian Standard

SPECIFICATION FOR STEAM IRONS

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 26 November 1986, after the draft finalized by Electrical Appliances Sectional Committee had been approved by the Electrotechnical Division Council.

0.2 This standard was first published in 1971. This revision has been undertaken to upgrade its contents and to align this standard with IS : 302-1979* which is primarily based on the latest IEC Publications. For the sake of convenience of reference, the format of the standard has been modified to bring in line with IEC Publications on household electrical appliances.

0.3 This standard is to be read in conjunction with IS : 302-1979*. For the sake of convenience, the clauses of this standard correspond to those of IS : 302-1979*. Instead of reproducing full text of each clause, clauses of IS : 302-1979* which are applicable (which means that relevant provisions of the clause apply) or not applicable and the sub-clauses or portions thereof which are not applicable are indicated as under:

i) In case of a clause where it is applicable or not applicable, the wording used is "This clause of IS : 302-1979* is applicable/not applicable; and

ii) In case of a sub-clause or part thereof 'Not applicable'.

Wherever a sub-clause of IS : 302-1979* is to be replaced by a new text, it has been indicated as under:

'*Replacement* — Followed by the new text.'

Any addition to the existing provisions of a sub-clause of IS : 302-1979* has been indicated as under:

'*Addition* — Followed by the text of the additional matter.'

---

*General and safety requirements for household and similar electrical appliances (*fifth revision*).

Clauses/Tables which are additional to those of IS: 302-1979* are numbered starting from **101** and additional sub-clauses are numbered with the main clause number followed by **101**, **102**, etc, for example, **7.101**.

Additional appendices have been numbered starting from AA.

Should, however, any deviation exist between IS : 302-1979* and this standard, the provision of the latter shall apply.

0.4 While preparing this standard, assistance has been derived from the following publications issued by the International Electrotechnical Commission:

IEC Pub 335-2-3 (1977) Safety of household and similar electrical appliances: Particular requirements for electric irons

IEC Pub 311 (1970) Methods of measurement of performance of electric iron for household or similar use

IEC Pub 311A (1970) Methods of measurement of performance of electric irons for household or similar use

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.0 This clause of IS : 302-1979* is applicable except as follows:

1.1 Replacement — This standard applies to electric steam irons for household and similar purposes.

Irons not intended for normal household use, but which nevertheless may be a source of danger to the public, such as irons intended to be used by laymen in shops, in light industry and on farms, are within the scope of this standard.

This standard does not take into account the special hazards which exist in nurseries and other places where there are young children or aged or infirm persons without supervision; in such cases, additional requirements may be necessary.

---

*General and safety requirements for household and similar electrical appliances (*fifth revision*).

†Rules for rounding off numerical values (*revised*).

1.2 Replacement — This standard does not apply to:

- — rotary ironers;
- — flat-bed ironers;
- — irons intended to be used in vehicles or on board ships or aircraft;
- — irons intended to be used in tropical countries;
- — irons intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas).

2. TERMINOLOGY

2.1 This clause of IS : 302-1979* is applicable except as follows:

2.8, **2.9**, **2.11**, **2.26** to **2.28** not applicable.

2.29 Replacement — The following are the conditions under which the appliance is operated:

a) Irons with a thermostat are operated with the thermostat at the highest setting; other irons are operated so that the temperature at the centre of the heating surface is maintained at 250 ± 10°C by switching the supply on and off.

b) Irons with stands which are attached or incorporated and irons delivered with a separate stand, are operated on their stands; irons without stands are suspended by their handle, in still air, with the soleplate in the horizontal position.

2.30, **2.31**, **2.33** to **2.35** not applicable.

Additional Sub-clauses

2.101 Electric Iron — A portable appliance, which has an electrically heated soleplate and is used for ironing textile materials.

2.102 Thermostatic Iron — An iron fitted with a thermostat, setting of which can be adjusted manually to obtain variable range of temperature control of the soleplate.

2.103 Electric Iron with Self-Resetting Thermal Cut-Out — An iron fitted with a fixed thermostat to limit the maximum temperature of the soleplate.

2.104 Dry Iron — An iron having neither means to produce and supply steam nor to spray water onto textile materials while ironing.

---

*General and safety requirements for household and similar electrical appliances (*fifth revision*).

2.105 Steam Iron — An iron having means to produce and supply steam to textile materials while ironing.

2.106 Spray Iron — An iron provided with means to spray water to textile materials for ironing.

2.107 Soleplate — The flat surface of the iron, which is heated electrically and pressed against textile materials while ironing.

2.108 Mid-Point — The mid-point on the centre lines on the soleplate.

2.109 Automatic Iron — An electric iron fitted with temperature control device, the setting of which can be adjusted manually to alter the soleplate temperature over a range and maintain within certain limits.

NOTE — Electric iron provided with a thermal cut-out only is not treated as an automatic iron.

3. GENERAL REQUIREMENTS

3.1 This clause of IS : 302-1979* is applicable.

4. GENERAL NOTES ON TESTS

4.1 This clause of IS : 302-1979* is applicable except as follows.

4.2 NOTE 3 — Not applicable.

4.3 Replacement — The tests are made in the order of the clauses except that for thermostatic irons, the test of sub-clause **21.101** is made before the test of **11**.

4.6 Paras 6 and 7, **4.7**, **4.8**, **4.10**, **4.13**, **4.14** and **4.19** not applicable.

5. RATING

This clause of IS : 302-1979* is applicable except as follows.

5.1 Replacement — The rated voltage shall not exceed 250 V. The preferred value shall be 240 V.

5.2 Replacement — The rated input shall be 1 000 W or 1 250 W.

6. CLASSIFICATION

6.1 This clause of IS : 302-1979* is applicable.

7. MARKING

This clause of IS: 302-1979* is applicable except as follows.

---

*General and safety requirements for household and similar electrical appliances (*fifth revision*).

7.1 Replacement — Electric irons shall be marked with the following information:

a) Name of the manufacturer, trade mark or identification mark;
b) Rated voltage in volts;
c) Rated input in watts;
d) Type of iron, that is, steam iron; and
e) Country of manufacture.

7.2, **7.3**, **7.4** and **7.8** not applicable.

7.12 Replacement — An instruction sheet giving necessary instructions including precautions to be taken for the proper use of the electric iron shall be provided.

7.14 Para 3, 5 and 6 not applicable.

Additional Sub-clause

7.101 Non-automatic iron intended for steam ironing only shall be marked 'USE ONLY AS A STEAM IRON'.

7.102 Certification marking.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers, may be obtained from the Bureau of Indian Standards.

8. PROTECTION AGAINST ELECTRIC SHOCK

This clause of IS : 302-1979* is applicable except as follows:

8.2 to **8.4**, **8.8** and **8.9** not applicable.

9. STARTING OF MOTOR OPERATED APPLIANCE

This clause of IS : 302-1979* is not applicable.

10. INPUT AND CURRENT

This clause of IS : 302-1979* is applicable except as follows:

10.2 and **10.3** not applicable.

---

*General and safety requirements for household and similar electrical appliances (*fifth revision*).

11. TEMPERATURE RISE

This clause of IS : 302-1979* is applicable except as follows:

11.5, **11.6**, **11.9**, **11.10** not applicable.

12. OPERATION UNDER OVERLOAD CONDITIONS OF APPLIANCES WITH HEATING ELEMENTS

This clause of IS : 302-1979* is applicable except as follows:

12.3 not applicable.

13. ELECTRICAL INSULATION AND LEAKAGE CURRENT AT OPERATING TEMPERATURE

Additional Sub-clause

13.2.2 The test specified in **13.2.1** shall be carried out under the following conditions:

a) With automatic iron, the thermostat shall be set at its maximum setting and the leakage current shall be observed during the heating of the iron from the room temperature until the first operation of the thermostat.

b) With non-automatic iron, the leakage current shall be observed during the heating of the iron from the room temperature until the temperature of soleplate reaches 290°C. With iron fitted with thermal control, the leakage current shall be observed during the heating of the iron from room temperature until operation of the control.

14. RADIO AND TELEVISION INTERFERENCE SUPPRESSION

This clause of IS : 302-1979* is not applicable.

15. MOISTURE RESISTANCE

This clause of IS : 302-1979* is applicable except as follows:

15.2.1 to **15.2.4** not applicable.

15.3 Replacement — The iron is placed in the filling position recommended by the manufacturer. The water reservoir of an iron is to be filled with distilled water, and a further quantity of 100 ml of water is steadily poured into the filling opening over a period of 1 minute. While in the filling position, the iron should meet the electric strength test and leakage current test.

---

*General and safety requirements for household and similar electrical appliances (*fifth revision*).

16. INSULATION RESISTANCE AND ELECTRIC STRENGTH (AFTER HUMIDITY TREATMENT)

This clause of IS : 302-1979* is applicable except as follows:

16.3 not applicable.

16.4 Sl No. 7 of the table not applicable.

17. OVERLOAD PROTECTION

This clause of IS : 302-1979* not applicable.

18. ENDURANCE

This clause of IS : 302-1979* is applicable except as follows.

18.1 Replacement — Appliances shall be so constructed that, in normal use there will be no electrical or mechanical failure that might impair compliance with this standard. The insulation shall not be damaged and contacts and connections shall not work loose as a result of heating, vibration, etc.

Moreover, overload protection devices shall not operate under normal running conditions.

The iron shall be operated for 500 h or 25 000 operations of the thermostat whichever occurs earlier. Unless otherwise specified, the thermostat, if adjustable by the user, shall be at its maximum setting For irons without thermostats or self-resetting thermal cut-outs, the temperature of the soleplate or heating surface shall be maintained between 205°C and 260°C by suitable cooling means, such as a jet of air or a cooling plate.

The iron shall be supported in air with the soleplate in a horizontal position so as to allow free passage of steam. The test shall be arranged to give a cycle of 8 hours steaming, 8 hours dry heating and at least 8 hours cooling.

The cooling period shall not be included in the 500 hours operating period. During the dry heating test, irons with adjustable thermostats shall be set at a maximum setting.

During the steaming test, irons with adjustable thermostats shall be set at the steaming setting marked by the manufacturer, or at the midsetting of the steaming range.

For the steaming test the water used shall comply with Appendix AA unless the manufacturer's instructions say that the iron is to be used

---

*General and safety requirements for household and similar electrical appliances (*fifth revision*).

with distilled or demineralized water, in which case the steaming test shall be made with such water. De-furring may be carried out as required in accordance with the manufacturer's instructions.

There shall be no electrical or mechanical failures of the iron or thermostat, nor undue burning, pitting, or welding of the contacts.

The soleplate temperature of an iron incorporating thermostats shall not exceed after this test 315°C average or 350°C maximum.

18.2 to **18.5** — Not applicable.

19. ABNORMAL OPERATION

This clause of IS : 302-1979* is applicable except as follows:

19.1(b), **19.1** paras 5 and 6 not applicable.

19.2 Addition — Conditions without adequate heat discharge are obtained by testing the electric iron on the floor of the test corner with the iron supported on its stand.

NOTE — Thermostatically controlled irons are not to be subjected to the test.

19.6 to **19.11** — not applicable.

20. STABILITY AND MECHANICAL HAZARDS

This clause of IS : 302-1979* is applicable except as follows:

20.1 Replacement — The electric shall be stable compliance is checked by the following test, which is carried out with the reservoir filled to capacity with water and also without water.

The electric iron with the stand which is attached or incorporated shall be placed on its stand on a plane inclined at an angle of 10° to the horizontal, the cable or cord resting in the most unfavourable position. If the iron over turns in one or more positions, it is subjected to the test of **11** in the overturned positions.

An iron supplied with a separate stand shall be placed on its stand on a plane inclined at an angle of 15° to the horizontal. Light blows are applied to the stand to overcome static friction between iron and stand. If the iron overturns or slips off the stand in one or more position, it is subjected to the test of **11** in all the positions the iron will take up after overturning or slipping off the stand.

During the test the temperature rise shall not exceed the values shown in the table of **19.11**.

---

*General and safety requirements for household and similar electrical appliances (*fifth revision*).

20.2 Not applicable.

21. MECHANICAL STRENGTH

This clause of IS : 302-1979* is applicable except as follows.

21.1 Para 2 *Replacement*

Compliance is checked by applying blows to the sample, by means of the apparatus shown in Fig. 12 of IS : 302-1979* and by the test of **21.101**.

21.2 to **21.4** — Not applicable.

Additional Sub-clause

21.101 Short Drop Test — The sample is suspended by its handle, with the soleplate in the horizontal position, on a machine by which it is dropped 1 000 times, at a rate not exceeding 20 falls per minute, from a height of 40 mm on to a rigidly supported steel plate having a thickness of at least 15 mm and a mass of at least 15 kg (*see* Fig. 101).

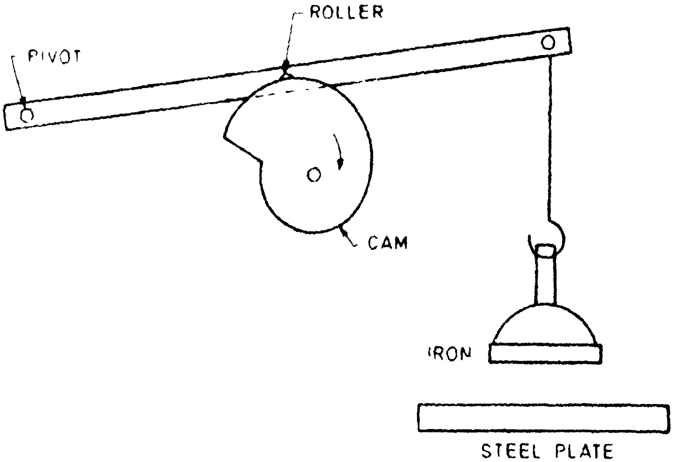


Fig. 101 Apparatus for Drop Test

The machine is so designed that the iron rests on the steel plate for approximately 15 percent of the duration of the test, and the sample is so mounted that there is no additional weight which would influence the impact energy.

---

*General and safety requirements for household and similar electrical appliances (*fifth revision*).

During the test, the iron is operated so that the soleplate temperature is maintained as specified for conditions of adequate heat discharge.

After the test, a thermostatic iron shall not change its calibration by more than + 10°C or —20°C There shall be no exposure of live parts caused by breakage or distortion of the enclosure.

21.102 Long Drop Test — The iron shall be dropped 5 times from a height of 1 m onto a wooden floor, as follows:

a) On the left side, with the iron at room temperature;

b) On the right side, after the iron has been heating for about 2 minutes, except that if the thermostat opens within 2 minutes, the time may be reduced, so that the drop is made with the thermostat closed;

c) On the point, after the iron has become well heated and with the thermostat in the closed position;

d) On the heel after the iron has become well heated and just after the thermostat has opened; and

e) On the soleplate, just after the iron has been allowed to cool half-way to room temperature.

Following the long drop test, there shall be no breakage or distortion of the enclosure which would expose live parts, nor shall there be any loosening of the electrical connections

22. CONSTRUCTION

This clause of IS : 302-1979* is applicable except as follows:

22.7, 22.9, 22.12, 22.15, 22.16, 22.20, 22.25, 22.26, 22.29 to **22.33** not applicable.

Additional sub-clauses

22.101 General — Steam irons shall be so constructed that there is no spillage of water, or sudden burst of steam or water, likely to cause danger to the user when the iron is switched on, or is being filled or used in accordance with manufacturer's instructions.

22.102 Soleplate — The soleplate of the iron shall be of metal and shall have a smooth durable flat surface which shall resist corrosion and damage due to heat under normal working conditions and shall contain necessary steam vents.

---

*General and safety requirements for household and similar electrical appliances (*fifth revision*).

22.103 Soleplate Area — The area of the soleplate shall be specified. The minimum recommended value is 0·02 m².

22.104 Mass of the Iron — The mass of the iron shall be specified. The minimum recommended value is 1·25 kg.

22.105 Handle — The handle shall be of electrically non-conducting and heat insulating material and shall be arranged to have adequate clearance from the main body so as to prevent in normal use, inadvertent contact between the operator's hand and any metal part.

22.106 Control Knobs — General knobs, if any, shall be of electrically non-conducting and heat insulating material and shall be so designed that there is no danger of making inadvertent contact either with live parts or with any metal part.

NOTE — Any metallic marking plate attached to the control knob is not covered by this requirement.

22.107 Stand — Irons shall be provided with stands on which they may rest when hot but not in use. The stand may be either a separate device or may form a part of the appliance as in the case of heel stand. The stand shall not foul the appliance connector, where such a connector is used.

The soleplate shall not form part of the stand.

22.108 Heating Elements — Heating elements of replaceable type shall be so arranged as to be easily replaceable.

22.109 Indicator Lamp — An indicator lamp shall be provided to indicate when the iron has reached the required temperature.

23. INTERNAL WIRING

This clause of IS : 302-1979* is applicable except as follows:

23.4 to **23.7** not applicable.

24. COMPONENTS

This clause of IS : 302-1979* is applicable except as follows:

24.5 to **24.10** not applicable.

Additional Sub-clause

22.101 In addition to the provisions of **24.11**, the following shall also apply.

---

*General and safety requirements for household and similar electrical appliances (*fifth revision*).

When an adjustable thermostat is fitted, the temperature of the soleplate measured at its centre shall not exceed 100°C with the thermostat set at its lowest setting; and it shall exceed 230°C but shall not exceed 290°C with the thermostat set at its highest setting. Between these limits, the temperature regulation should be uniform and smooth, and when the thermostat is set at the mid-point of the scale, the temperature should not vary by more than ± 25°C of the mean temperature of the range. The knob of the regulator shall be so placed and designed as to minimize the possibility of its being inadvertently moved from its setting while the iron is in use. Thermostats of fixed settings or other thermal controls, when provided, shall be such that the temperature at the centre of the soleplate exceeds 230°C but does not exced 290°C.

NOTE — The thermostat shall comply with these requirements before and after the endurance test.

25. SUPPLY CONNECTIONS AND EXTERNAL FLEXIBLE CABLES AND CORDS

This clause of IS : 302-1979* is applicable except as follows.

25.1 Replacement — The electric iron shall be provided with either an appliance inlet or supply cord which shall be not less than 2 M long. It shall not be provided with more than one means of supply.

25.4 Addition — Type Z attachment is not allowed in electric iron.

25.7, **25.9** — Not applicable.

25.10 Paras 4 and 5

Replacement

25.10.1 *Test for Cord Guard* — The part of the iron comprising the cable entry fitted with the cord guard and the flexible cable or cord for which the iron is designed, is fixed to the oscillating member of an apparatus similar to that shown in Fig. 102

25.10.2 The sample is so mounted that the axis of oscillation is tangential to the outer surface of the part in which the cord guard is secured, and when the oscillating member is at the middle of its travel, the axis of the cable or cord, where it leaves the cord guard, is vertical.

25.10.3 A load having a mass equal to that of the iron but not less than 2 kg or more than 6 kg is attached to the cable or cord.

25.10.4 The oscillating member is moved backwards and forwards through an angle of 90° (45° on either side of the vertical), the number of flexings being 20 000 and the rate of flexing 60 per minute. After 10 000 flexings, the sample is turned through 90° about the centre line of the cord guard.

---

*General and safety requirements for household and similar electrical appliances (*fifth revision*).

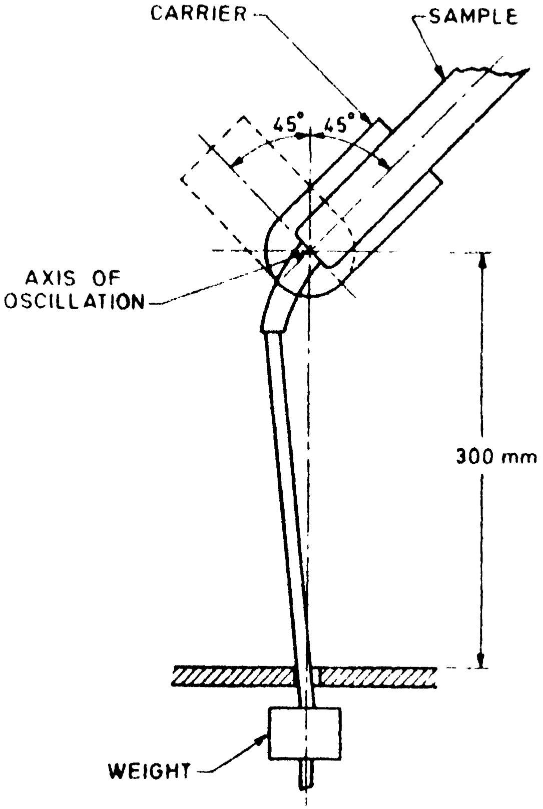


FIG. 102 APPARATUS FOR FLEXING TEST

25.10.5 After the test, the cord guard shall not have worked loose and neither the cord guard nor the flexible cable or cord shall show any damage within the meaning of this specification except that not more than 10 percent of the total number of conductor strands may have been broken.

NOTE 1 — A flexing is one movement either backward or forward.

NOTE 2 — In case the iron is provided with appliance inlet and connector, they shall be tested according to IS : 3010 (Part 1)-1965* and IS : 3010 (Part 2)-1965†.

---

*Specification for appliance-connectors and appliance-inlets (non-reversible three-pin type): Part 1 Appliance connectors.

†Specification for appliance connectors and appliance-inlets (non-reversible three-pin type): Part 2 Appliance inlets.

26. TERMINALS FOR EXTERNAL CONDUCTORS

This clause of IS : 302-1979* is applicable.

27. PROVISIONS FOR EARTHING

This clause of IS : 302-1979* is applicable.

28. SCREWS AND CONNECTIONS

This clause of IS : 302-1979* is applicable.

29. CREEPAGE DISTANCES AND CLEARANCES

This clause of IS : 302-1979* is applicable.

30. RESISTANCE TO HEAT, FIRE AND TRACKING

This clause of IS . 302-1979* is applicable.

31. RESISTANCE TO RUSTING

This clause of IS : 302-1979* is applicable.

32. RADIATION HAZARDS

This clause of IS : 302-1979* is applicable.

33. FINISH

This clause of IS : 302-1979* is applicable.

Additional Clauses

101. MEASUREMENT OF SOLEPLATE TEMPERATURE

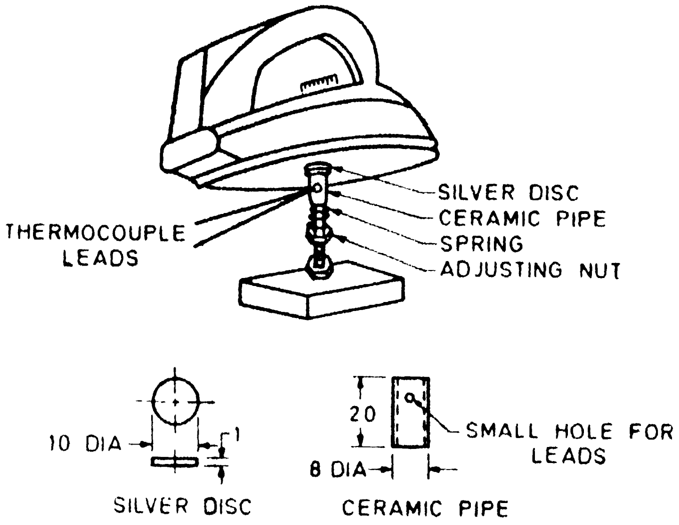
101.1 Steam iron shall be tested away from the walls of the right angle test corner. The iron is switched on and heated with a voltage corresponding to the rated input.

101.2 Steam iron shall be supported on a three-point metallic support, unless otherwise stated. The three-point support is so constructed that the soleplate of the iron is horizontal and it is at least 100 mm above a parallel base upon which the iron and stand are supported.

101.3 The temperature of the iron shall be measured using fine wire thermocouple with wire not over 3 mm in diameter. Thermocouples shall be securely fastened at the point of measurement to assure good thermal contact (*see* Fig. 103).

---

*General and safety requirements for household and similar electrical appliances (*fifth revision*).



All dimensions in millimetres.

FIG. 103 WAY OF ATTACHING THERMOCOUPLE

101.4 The temperature of the soleplate shall be measured by a thermocouple which has been silver soldered to a silver disc. The silver disc, 10 mm in diameter and 1 mm thick, is pressed against the soleplate of the iron at the mid-point of the soleplate.

101.5 For thermostatic iron the highest and the lowest temperatures are measured during five successive cycles of temperature variation after the iron has reached the steady state conditions. The mean value of the five highest and lowest temperatures is the soleplate temperature for the setting. This test is repeated for each setting of the thermostat.

101.6 For irons with self-resetting thermal cut-out, the measurement shall be carried out in the same way as for thermostatic type.

101.7 For other types of irons, the highest soleplate temperature shall be measured after the iron has reached steady state conditions.

NOTE 1 — The steady state temperature is considered to be achieved if the temperature at the mid-point of the soleplate does not vary by more than 1°C per hour.

NOTE 2 — For those irons whose thermostat settings are indicated by a sector the setting shall be at the centre of the range.

NOTE 3 — The adjustment of the thermostat control to obtain the required setting shall be made in the direction of increasing temperature.

102. MEASUREMENT OF TEMPERATURE DISTRIBUTION

102.1 The iron is placed on the three metallic supports (*see* **101**) and is heated up with the voltage specified in **101** until the soleplate temperature at the mid-point exceeds 200°C. Then, after switching off the supply, the iron is placed for approximately 5 seconds on a sheet of white paper spread over flannel cloth which covers a wooden board After removal of the iron, darkening of the paper indicates the temperature distribution over the soleplate. The hottest point is determined as the centre of the darkest area.

NOTE — Positive phototype paper, which is unexposed and developed, white tracing paper, or white blotting paper is recommended as the white paper for this measurement.

102.2 After this the iron is placed on the three metallic supports (*see* **101**) and a thermocouple is attached at each of the following four points of the soleplate:

a) The hottest point determined in **102.1**,

b) The mid-point of the soleplate,

c) The point on the longitudinal centre line 20 mm from the tip of the soleplate, and

d) The point on the longitudinal centre line 20 mm from the heel and of the soleplate.

For a thermostatic iron, the thermostat is set so that the temperature at the mid-point is maintained at approximately 150°C under the steady-state conditions, and the measurement is performed after the iron has reached the steady-state conditions.

For other types of iron, the temperature at the mid-point is maintained at approximately 150°C for at least 15 minutes by switching the supply on and off before taking temperature measurements.

Using a recording-type instrument, the varying temperature is recorded for 10 minutes and the average temperature for the 10 minutes is determined for each of the four points. The mean of the four average temperatures is then determined, and the difference between each average temperature and the mean temperature is also calculated. The four temperature differences are recorded, as the indication of the temperature distribution over the soleplate.

102.3 Any of the four temperature differences recorded in the above test shall not differ by more than 10°C.

103. MEASUREMENT OF INITIAL OVERSWING TEMPERATURE AND HEATING-UP EXCESS TEMPERATURE

103.1 The iron is placed on the three metallic supports (*see* **101**) and a thermocouple is attached at the hottest point determined as in **102.1** The iron is then switched on and the thermostat is adjusted so that an average temperature of about 120°C is maintained at the measuring point under the steady-state conditions The iron is allowed to cool down to room temperature. The iron is switched on again and, using a recording-type instrument, the time and temperature are measured at the hottest point from switching on over nine successive cycles to produce a graph of the type shown in Fig 104.

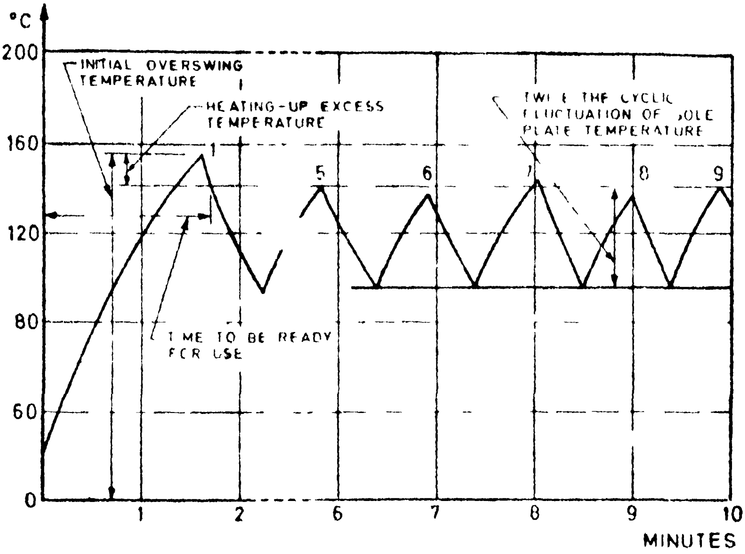


FIG. 104 VARIATION OF SOLEPLATE TEMPERATURE AFTER SWITCHING ON

103.2 From the graph the following are determined·

a) The initial overswing temperature, which is the first peak temperature between the first and second cut-outs of the thermostat;

b) The mean peak temperature, which is the mean value of the last five peak temperatures; and

c) The heating-up excess temperature, which is the difference between the initial overswing temperature and the mean peak temperature.

103.3 The initial overswing temperature shall not be more than 165°C and the heating up excess temperature shall not exceed 30°C.

104. MEASUREMENT OF CYCLIC FLUCTUATION OF TEMPERATURE OF THE HOTTEST POINT

104.1 The procedure for the temperature measurement is the same as in **103**, except that highest and lowest temperatures of each cycle are measured for five successive cycles after the iron has reached the steady-state conditions. The mean value for the highest temperatures and for the lowest temperatures are determined. One half of the difference between the mean values is the cyclic fluctuation of the temperature of the hottest point and is expressed in Celsius degrees.

NOTE — This measurement may be combined with the measurements in **103**.

104.2 The cyclic fluctuation of the temperature of the hottest point shall not exceed 7°C.

105. MEASUREMENT OF TEMPERATURE DROP UNDER LOAD

105.1 Measurement of Temperature and Average Input Power Under Idling Operation — The iron is placed on the three metallic supports (*see* **101**), and a thermocouple is attached at the mid-point of the soleplate. The iron is then switched on and the thermostat is adjusted so that an average temperature of 200 ± 10°C is maintained under the steady-state conditions.

After the iron has reached the steady-state conditions, the highest and the lowest temperatures for five successive cycles are measured, and the mean temperature T_1 for them is determined. At the same, the average power W_1 of the input consumed under the steady-state conditions is determined by dividing the electric energy in watthours consumed in the course of at least five regulating cycles by the total duration of these cycles.

105.2 Measurement of Temperature and Average Input Power Under Load — The iron is placed on the supports of the measuring apparatus illustrated in Fig. 105 and switched on with the same thermostat as for **105.1**.

The flow rate of cooling water is adjusted so that the temperature difference between outgoing water and incoming water does not exceed 10°C after steady condition is reached.

The height of the pointed supports is determined in a preliminary test in such a way that the average input power absorbed by the iron is about 50 percent of the rated input.

After ten successive cycles of operation of the thermostat, it is assumed that steady condition is reached. The average power of the input and the mean temperature T_c of the soleplate under load are determined, as for the idling case in **105.1**.

105.3 For irons with self resetting thermal cut-out, the measurements at **105.1** and **105.2** shall be carried out in the same way as that of a thermostatic type. For other types of irons, the above measurements are carried out similarly after the iron has reached the steady-state conditions.

105.4 Calculation of Temperature Drop Under Load — The measured temperature drop under load is the difference $T = T_1 - T_c$, T_1 and T_c being respectively the mean temperature under idling and load determined in **105.1** to **105.3**.

The temperature drop per 100 W load is calculated by the formula:

$$T\,100 = \frac{T \times 100}{W_c - W_1}$$

where

W_c = average input power under load, and

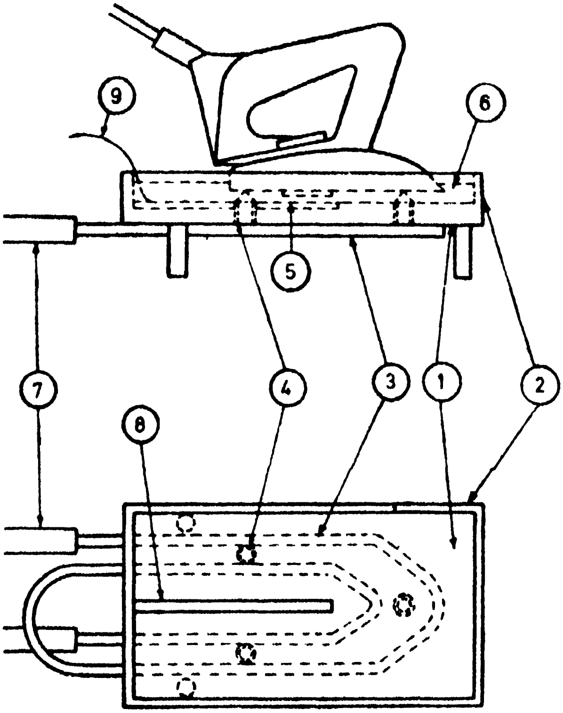
W_1 = average input power under idling.

105.5 The temperature drop under load shall not exceed 10°C

106. MEASUREMENT OF HEATING UP TIME UNDER STEAMING OPERATION

106.1 The water container is filled with distilled water at a temperature of 27±2°C to the capacity specified by the manufacturer. The thermostat is set to the normal steaming position as specified by the manufacturer. If the normal steaming position is not specified, the thermostat is set to the midpoint of the steaming range. If neither the steaming position nor the steaming range is marked on the iron, the thermostat is set at the midpoint of the thermostat range. The iron is placed on the metallic supports that are placed on a dark-coloured cloth, which shows up water drops on it plainly. The iron is then connected to the power supply and is heated up. When the iron begins emitting steam, water drops are usually emitted from the iron, and can be observed easily on the dark-coloured cloth. Wait until the steam emission no longer carries water drops and becomes steady, and measure the time from the switching of steady steam emission without accompanying water drops. This is the heating-up time for the steaming operation of the steam iron and is expressed in minutes and seconds.

NOTE — Emission of water drops at the beginning of steam emission is called flooding or spitting. It is assumed that the steam iron is not ready for use until spitting is over.



1. Copper base plate
2. Edge of the base plate
3. Cooling pipes
4. Pointed supports
5. Silver disc with a thermocouple
6. Silicone oil
7. Cooling water pipes
8. Slot in the base plate for thermocouple leads
9. Thermocouple leads

NOTE — The base plate (1) is made of copper plate 10 mm to 15 mm thick. Around the periphery of the base plate, the edge (2) about 10 mm high is soldered, so that the plate forms a shallow vessel for silicone oil. Cooling pipes of copper (3) are soldered to the lower surface of the base plate, and are connected to cooling water pipes (7). Three pointed supports (4) are provided on the base plate. The height of the supports can be adjusted from 1 mm to 2 mm. The silver disc with a thermocouple (5) is placed at the mid-point of the soleplate, and it must not touch the base plate. The base plate of the apparatus is held horizontally and is filled with silicone oil 3 mm to 4 mm deep.

FIG. 105 APPARATUS FOR MEASURING TEMPERATURE DROP UNDER LOAD

For the drip-feed type steam iron, it is necessary to open the steam control-valve as soon as the indicator or lamp, which indicates in most cases the first cut-off of the thermostat, is switched on. If there is no such indicator, the steam control-valve is opened at the end of the heating-up period for dry operation.

106.2 The heating-up time shall not exceed 3 minutes.

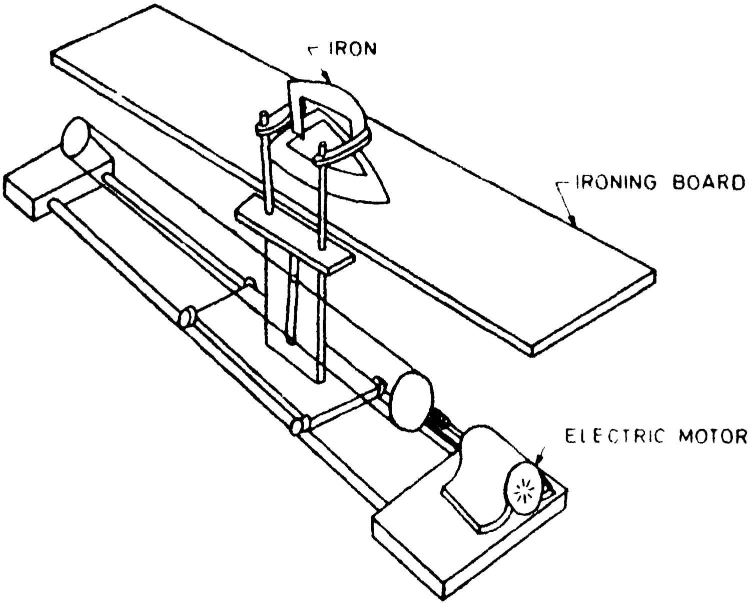


FIG. 106 APPARATUS FOR MEASURING STEAMING RATE AND STEAMING TIME

107. MEASUREMENT OF STEAMING TIME AND STEAMING RATE

107.1 The thermostat, if any, is set as described in **106.1**. The water container is filled with distilled water to the capacity specified by the manufacturer. The iron is supported with metallic supports placed on a balance which has an accuracy better than ± 1 g.

The iron in upright position, if any, is then connected to the supply and heated up.

The steam release is operated as soon as the thermostat switches off for the second time. The iron is then placed in the horizontal position and the measurement of steaming time started.

At the beginning of the test, spitting or flooding, if any, shall be observed in accordance with the test method given in **106**. The measurement of steaming time shall start after the spitting or flooding stops.

The time to the instant that the amount of water is reduced to 10% of the initial amount is noted in minutes and seconds.

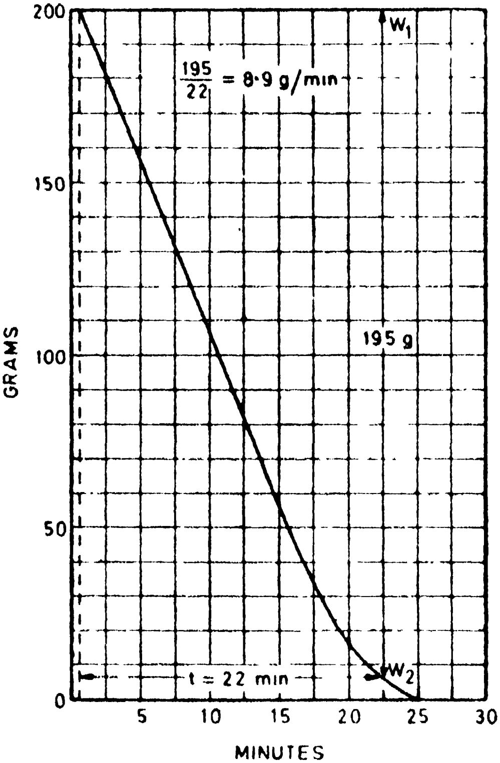


Fig. 107 Curve for Loss of Mass/Time

107.2 The steaming time of the iron shall be not less than 20 minutes.

107.3 The steaming rate is determined by the following formula and is expressed in g/min:

$$\text{Steaming rate} = \frac{0{\cdot}9\,M - L}{\text{Steaming time}}$$

where

M = Initial amount of water; and

L = Amount of water lost during spitting or flooding.

The steaming rate shall be not less than 8 g/min

108. TESTS

108.0 Categories of Tests — Tests are classified as type, acceptance and routine tests.

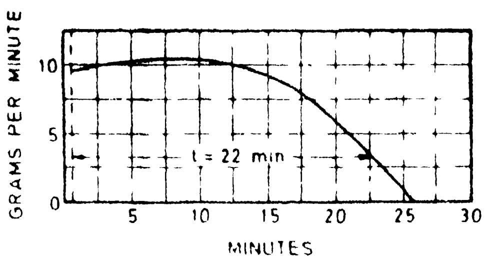


Fig 108 Curve for Steaming Rate/Time

108.1 Type Tests — The tests specified in Table 101 shall constitute the type tests and shall be carried out on two samples of irons of the same type and rating selected preferably at random from a regular production lot. Before commencement of the tests, the irons shall be visually examined and inspected for obvious visual defects in respect of components, parts and their assembly, construction, mechanical hazards, markings, provision of suitable terminals for supply connections, earthing and the effectiveness of screws and connections. The external surface finish shall be even and free from finishing defects.

108.1.1 *Criteria of Acceptance* — Both samples shall successfully pass all the type tests for proving conformity with the requirements of the standard. If any of the sample fails in any of the type tests, the testing authority, at its discretion, may call for fresh samples not exceeding twice the original number and subject them again to all tests or the test(s) in which failure(s) had occurred. No failure should be permitted in the repeat test(s).

TABLE 101 SCHEDULE OF TYPE TEST

(*Clause* 108.1)

SL No.	TEST	CLAUSE REFERENCE
1.	Protection against electric shock	8
2.	Input	10
3.	Temperature-rise	11
4.	Operation under overload conditions	12
5.	Electrical insulation, and leakage current at operating temperature	13
6.	Moisture resistance	15
7.	Insulation resistance and electric strength (after humidity treatment)	16
8.	Endurance	18
9.	Abnormal operation	19
10.	Mechanical strength	21
11.	Cord grip and cord guard	25
12.	Screws and connections	28
13.	Creepage distances and clearances	29
14.	Resistance to heat, fire and tracking	30
15.	Resistance to rusting	31
16.	Measurement of temperature distribution	102
17.	Measurement of overswing temperature and heating up excess temperature	103
18.	Measurement of cyclic fluctuation of temperature of hottest point	104
19.	Measurement of temperature drop under load	105
20.	Measurement of heating up time under steaming operation	106
21.	Measurement of steaming time and steaming rate	107

108.2 Acceptance Tests — The following shall constitute the acceptance tests:

Test	*Clause Reference*
a) Protection against electric shock	8
b) Input	10
c) Temperature-rise	11
d) Electrical insulation and leakage current at operating temperature	13
e) Moisture resistance	15

Test	*Clause Reference*
f) Insulation resistance and electric strength (after humidity treatment)	16
g) Earthing connection	27
h) Heating-up time	101
j) Measurement of sole-plate temperature	102

NOTE — For the purpose of acceptance test, the humidity treatment shall be done for 24 hours while conducting the test for moisture resistance (15).

108.2.1 A recommended sampling procedure for acceptance tests is given in Appendix B of IS : 302-1979*.

108.3 Routine Tests — The following shall constitute the routine tests:

Test	*Clause Reference*
a) Protection against electric shock	8
b) High voltage	13.3.2 of IS : 302-1979*
c) Earthing connection	27

APPENDIX A

TABLES OF TYPE TESTS

This appendix of IS : 302-1979* is not applicable.

APPENDIX B

(*Clause* 107 2.1)

SAMPLING PROCEDURE FOR ACCEPTANCE TESTS

This appendix of IS : 302-1979* is applicable.

APPENDIX C

ELECTRONIC CIRCUITS

This appendix of IS : 302-1979* is applicable if electronic circuit are used.

---

*General and safety requirements for household and similar electrical appliances (*fifth revision*).

APPENDIX D

MEASUREMENT OF TEMPERATURE WITH THERMOMETER

This appendix of IS : 302-1979* is applicable.

APPENDIX E

ALTERNATIVE TESTS FOR PROTECTED MOTOR UNITS

This appendix of IS : 302-1979* is not applicable.

APPENDIX F

IMPACT TESTS APPARATUS

This appendix of IS : 302-1979* is applicable.

APPENDIX G

THERMAL CONTROLS AND OVERLOAD RELEASES

This appendix of IS : 302-1979* is applicable if thermal controls and overload releases are used.

APPENDIX H

MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES

This appendix of IS : 302-1979* is applicable.

APPENDIX J

TEST FOR FIRE-RESISTING PROPERTIES

This appendix of IS : 302-1979* is applicable.

---

*General and safety requirements for household and similar electrical appliances (*fifth revision*).

APPENDIX K

BNF JET TEST FOR DETERMINATION OF THICKNESS OF COPPER AND NICKEL PLATING

This appendix of IS : 302-1979[*] is applicable if copper and nickel plating is used for finishing.

APPENDIX L

APPROXIMATE MEASUREMENT OF THICKNESS OF CHROMIUM ON NICKEL, STEEL AND COPPER

This appendix of IS : 302-1979[*] is applicable if chromium plating is used for finishing.

APPENDIX AA

(*Clause* 18.1)

HARD WATER FOR ENDURANCE TEST

AA-1. COMPOSITION OF WATER

AA-1.1 The water used for the test of **18.1** shall be water similar to that obtained from chalk bore-holes and having constituents within the following limits:

Total hardness	250 to 300 ppm
Temporary hardness	150 to 250 ppm
Calcium carbonate	150 to 250 ppm
Calcium sulphate	10 to 50 ppm
Calcium chloride (not more than)	20 ppm
Magnesium carbonate	100 ppm
Magnesium sulphate	50 ppm
Magnesium chloride	20 ppm
Sodium sulphate	20 ppm
Sodium chloride	50 ppm
Sodium nitrate	50 ppm
Sillica	10 to 15 ppm

---

[*] General and safety requirements for household and similar electrical appliances (*fifth revision*).

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002
Telephones 323 0131, 323 3375, 323 9402
Fax 91 11 3234062, 91 11 3239399, 91 11 3239382

Telegrams Manaksanstha
(Common to all Offices)

Central Laboratory:	Telephone
Plot No 20/9, Site IV, Sahibabad Industrial Area, SAHIBABAD 201010	8-77 00 32

Regional Offices:

Central	Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002	323 76 17
*Eastern	1/14 CIT Scheme VII M, V I P Road, Maniktola, CALCUTTA 700054	337 86 62
Northern	SCO 335-336, Sector 34-A, CHANDIGARH 160022	60 38 43
Southern	C I T Campus, IV Cross Road, CHENNAI 600113	235 23 15
†Western	Manakalaya, E9 Behind Marol Telephone Exchange, Andheri (East), MUMBAI 400093	832 92 95

Branch Offices:

'Pushpak', Nurmohamed Shaikh Marg, Khanpur, AHMEDABAD 380001	550 13 48
‡Peenya Industrial Area, 1st Stage, Bangalore - Tumkur Road, BANGALORE 560058	839 49 55
Gangotri Complex, 5th Floor Bhadbhada Road, T T Nagar, BHOPAL 462003	55 40 21
Plot No 62-63, Unit VI Ganga Nagar, BHUBANESHWAR 751001	40 36 27
Kalaikathir Buildings, 670 Avinashi Road, COIMBATORE 641037	21 01 41
Plot No 43, Sector 16 A, Mathura Road, FARIDABAD 121001	8-28 88 01
Savitri Complex, 116 G T Road GHAZIABAD 201001	8-71 19 96
53/5 Ward No 29, R G Barua Road 5th By-lane, GUWAHATI 781003	54 11 37
5-8-58C, L N Gupta Marg, Nampally Station Road, HYDERABAD 500001	20 10 83
E-52, Chitaranjan Marg, C-Scheme JAIPUR 302001	37 29 25
117/418 B, Sarvodaya Nagar, KANPUR 208005	21 68 76
Seth Bhawan, 2nd Floor, Behind Leela Cinema, Naval Kishore Road, LUCKNOW 226001	23 89 23
Patliputra Industrial Estate, PATNA 800013	26 23 05
T C No 14/1421, University P O Palayam, THIRUVANANTHAPURAM 695034	6 21 17
NIT Building, Second Floor, Gokulpat Market, NAGPUR 440010	52 51 71
Institution of Engineers (India) Building, 1332 Shivaji Nagar, PUNE 411005	32 36 35

---

*Sales Office is at 5 Chowringhee Approach, P O Princep Street, CALCUTTA 700072	27 10 85
†Sales Office is at Novelty Chambers, Grant Road, MUMBAI 400007	309 65 28
‡Sales Office is at 'F' Block, Unity Building, Narashimaraja Square, BANGALORE 560002	222 39 71

Printed at New India Printing Press, Khurja, India